

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

U.S. APPLICATION NO. (if known, see 37 CFR 1.51)

09/485500

INTERNATIONAL APPLICATION NO.

PCT/AU98/00635

INTERNATIONAL FILING DATE

12 AUGUST 1998

PRIORITY DATE CLAIMED

12 AUGUST 1997

TITLE OF INVENTION

STEREOSCOPIC VIEWING SYSTEM

APPLICANT(S) FOR DO/EO/US

GARDNER, Anthony John

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). Unsigned
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☒ A substitute specification. Amended specification pages.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information: International Search Report
Notification of Change of Inventor Name and Address

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17. ☒ **09/485500** The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

Neither international preliminary examination fee (37 CFR 1.482)
nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO
and International Search Report not prepared by the EPO or JPO \$970.00

International preliminary examination fee (37 CFR 1.482) not paid to
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International preliminary examination fee (37 CFR 1.482) not paid to USPTO but
international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$760.00

International preliminary examination fee paid to USPTO (37 CFR 1.482)
but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$670.00

International preliminary examination fee paid to USPTO (37 CFR 1.482)
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ENTER APPROPRIATE BASIC FEE AMOUNT =

\$ 970.00

Surcharge of \$130.00 for furnishing the oath or declaration later than ☐ 20 ☒ 30
months from the earliest claimed priority date (37 CFR 1.492(e)).

\$ 130.00

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE
Total claims	20 - 20 =	0	X \$18.00
Independent claims	1 - 3 =	0	X \$78.00
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$260.00

\$

TOTAL OF ABOVE CALCULATIONS =

\$ 1,100.00

Reduction of 1/2 for filing by small entity, if applicable. A Small Entity Statement
must also be filed (Note 37 CFR 1.9, 1.27, 1.28).

\$

SUBTOTAL =

\$

Processing fee of \$130.00 for furnishing the English translation later than ☐ 20 ☐ 30
months from the earliest claimed priority date (37 CFR 1.492(f)).

\$

TOTAL NATIONAL FEE =

\$ 1,100.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +

\$

TOTAL FEES ENCLOSED =

\$ 1,100.00

Amount to be:

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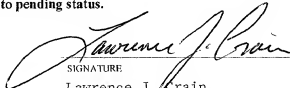
\$

- a. ☒ A check in the amount of \$ 1,100.00 to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees.
A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any
overpayment to Deposit Account No. 07-2069. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

GREER, BURNS & CRAIN, LTD.
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233 S. WACKER DRIVE
CHICAGO, ILLINOIS 60606


SIGNATURE

Lawrence J. Crain

NAME

31,497

REGISTRATION NUMBER

09/485500
430 Rec'd PCT/PTO 10 FEB 2000

0303.63605

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Anthony John GARDNER)

International Application No.:)
PCT/AU98/00635)

International Filing Date:)
12 August 1998)

Serial No.: Unassigned)

Filed: 10 February 2000)

For: STEREOSCOPIC VIEWING)
SYSTEM)

Art Unit: Unassigned)

Examiner: Unassigned)

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F-CLASS WCM
Appt: February 20, 1998

PRELIMINARY AMENDMENT

BOX PCT
Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Prior to examination of this application, please amend the application as follows:

IN THE CLAIMS:

Cancel claim 10, amend claims 3-9 and add new claims 11-20 as follows:

3. (Amended) A stereoscopic viewing system according to claim 1 [or claim 2] wherein, for a monochrome image, the vertical opaque strips are of substantially the same width as that of said raw image strips and have their [centre] center

lines respectively in register with alternate lines of junction between raw image strips, and the vertical lens strips are also of substantially the same width and have their [centre] center lines respectively in register with other alternate lines of junction between raw image strips.

4. (Amended) A stereoscopic viewing system according to claim 1 [or claim 2] wherein, for a [colour] color image, the raw image strips each contain a trio of columns of respectively R G and B pixels, that the lens strips are as wide as the trio and the opaque strips are of the same width as the individual R G and B pixel columns and are disposed between the lens strips.

5. (Amended) A stereoscopic viewing system according to [any one of claims 1 to 3] claim 1 wherein the masking means is in contact with the raw image.

6. (Amended) A stereoscopic viewing system according to [any one of claims 1 to 4] claim 1 wherein the opaque strip array is substantially co-planar with the lens strip array.

7. (Amended) A stereoscopic viewing system according to [any one of claims 1 to 6] claim 1 wherein the array of lens strips comprises a lenticular lens system in which each lens is of a tri-elliptical cross-section.

8. (Amended) A stereoscopic viewing system according to [any one of claims 1 to 6] claim 1 wherein the array of lens strips comprises a lenticular lens system in which each lens is of a circular cross-section.

9. (Amended) A stereoscopic viewing system according to [any one of claims 1 to 8] claim 1 wherein the mask means comprises a separate mask member between the raw image and the lens strips.

11. (New) A stereoscopic viewing system according to claim 2 wherein, for a monochrome image, the vertical opaque strips are of substantially the same width as that of said raw image strips and have their center lines respectively in register with alternate lines of junction between raw image strips, and the vertical lens strips are also of substantially the same width and have their center lines respectively in register with other alternate lines of junction between raw image strips.

12. (New) A stereoscopic viewing system according to claim 2 wherein, for a color image, the raw image strips each contain a trio of columns of respectively R G and B pixels, that the lens strips are as wide as the trio and the opaque strips are of the same width as the individual R G and B pixel columns and are disposed between the lens strips.

13. (New) A stereoscopic viewing system according to claim 2 wherein the masking means is in contact with the raw image.

14. (New) A stereoscopic viewing system according to claim 3 wherein the masking means is in contact with the raw image.

15. (New) A stereoscopic viewing system according to claim 2 wherein the opaque strip array is substantially co-planar with the lens strip array.

16. (New) A stereoscopic viewing system according to claim 3 wherein the opaque strip array is substantially co-planar with the lens strip array.

17. (New) A stereoscopic viewing system according to claim 2 wherein the array of lens strips comprises a lenticular lens system in which each lens is of a tri-elliptical cross-section.

18. (New) A stereoscopic viewing system according to claim 3 wherein the array of lens strips comprises a lenticular lens system in which each lens is of a tri-elliptical cross-section.

19. (New) A stereoscopic viewing system according to claim 2 wherein the array of lens strips comprises a lenticular lens system in which each lens is of a circular cross-section.

20. (New) A stereoscopic viewing system according to claim 2 wherein the mask means comprises a separate mask member between the raw image and the lens strips.

IN THE ABSTRACT:

An Abstract is attached on a separate sheet as follows:

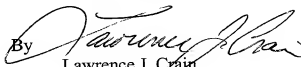
--A stereoscopic viewing system including a raw image having overlaid thereover a distance D therefrom a mask the mask including opaque strips, therein arranged so as to overlay portions of respective right and left image strips. In a particular version opaque strips are included as part of the raw image and also as part of the mask or both.--

REMARKS

Prior to examination of this application, the Examiner is respectfully requested to consider the above-listed Amendment.

Respectfully submitted,

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Applicant or Patented: Anthony John GARDNERAtty Docket No. 0303.63605

Serial or Patent No.: _____

Filed or Issued: _____

For: STEREOSCOPIC VIEWING SYSTEM

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) AND 1.27(b) - INDEPENDENT INVENTOR)

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees to the United States Patent and Trademark Office with regard to the invention entitled:

STEREOSCOPIC VIEWING SYSTEM

described in:

- ☐ the specification filed herewith.
☒ application serial no. PCT/AU98/00635, filed 12 August 1998.
☐ patent no. _____, issued _____.

I have not assigned, granted, conveyed, or licensed, and am under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who would not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern, or organization to which I have assigned, granted, conveyed, or licensed, or am under an obligation under contract or under law to assign, grant, convey, or license any rights in the invention, is listed below:

- ☒ no such person, concern, or organization.
☐ person, concerns, or organizations listed below.*

*NOTE: Separate verified statements are required from each named person, concern, or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

FULL NAME _____

ADDRESS _____

☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Anthony John GARDNER

NAME OF INVENTOR _____

NAME OF INVENTOR _____

NAME OF INVENTOR _____

Signature of Inventor _____

Signature of Inventor _____

Signature of Inventor _____

Date _____

Date _____

Date _____

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- 1 -

STEREOSCOPIC VIEWING SYSTEM

The present invention relates to a stereoscopic viewing system and, more particularly, to such a system adapted for viewing a stereoscopic image without the aid of spectacles or other image separating device located close to the eyes of a viewer.

5

BACKGROUND

Forms of stereoscopic television/video systems which provide stereoscopic viewing without the use of glasses or other encumbrances placed close to the eyes of a viewer are known. One such system is the so-called lenticular system wherein the image for viewing is made up of interleaved vertical image strips from two (left image and right image) camera views. In order to allow the eyes to resolve the two images into a single stereoscopic image, lens in the form of vertically arranged contiguous cylindric lens, or lens of other shapes, such as prisms, overlay the vertical image strips whereby, by refraction, the left image is directed towards the left eye of a viewer and the right image is directed towards the right eye of a viewer when the eyes are placed in a predetermined focal plane, or very near thereto. U.S. Patent No. 5,258,833 to Schenk describes this general background with reference to U.S. Patent No. 4,214,257 (Yamauchi) and U.S. Patent No. 2,543,793 (Marks). EP744872 discloses another implement action of stereoscopic image system wherein an electronically controlled shutter mechanism dynamically switches and direct the respective right and left images to the respective right and left eyes of an observer.

The light refracting element of a "lenticular" system often includes a lens such as lens element 48 shown, for example, in Figure 31A of EP744872. A good summary of the history and implementation of this kind of system is to be found in IEEE publication "Present Status of Three-Dimensional Television Research" in Proceedings of IEEE volume 83, No 7 July 1995. The systems described in those patents suffer from a sensitivity in the location of the focal plane for viewing and suffer from a large amount of light scatter which leads to distortion of the viewed image.

It is therefore desirable to ameliorate the above-mentioned problems and/or at least provide a useful alternative.

AMENDED SHEET
PCT/AU

ARTICLE 34

It is also desirable to provide a improved stereoscopic viewing system which enables an image to viewed as a 3D image from a plurality of positions along or adjacent a focal plane.

5 It is also desirable to provide an improved stereoscopic image system which can be adapted for use with passive, reflective image sources, such as photographs, drawings or the like as well as active, light emitting image sources such as television screen, video displays or any other form of light emitting or light iminating optical systems.

10 It is also desirable to provide an improved stereoscopic viewing system which is relatively simple in its construction and implementation and is economical in use to provide the desired three dimensional image to a viewer.

SUMMARY OF THE INVENTION

15 According to one aspect of the invention there is provided a stereoscopic viewing system comprising a raw image of a subject, which raw image comprises an array of substantially vertical raw image strips wherein alternating strips are respectively strips taken from source images, being a right eye view image and a left eye view image of the subject, an array of substantially vertical lens strips interposed between the raw image and a focal plane spaced from the raw image, wherein the respective lens strips are positioned
20 to receive light from the raw image strips and refract that received light to cause a stereoscopic image of the subject to be resolved on the focal plane, and masking means comprising a substantially planar array of vertical opaque strips interposed between the raw image and the said focal plane.

25 In one preferred embodiment of the invention, the source images are divided into adjacent vertical strips and those strips which are taken for the raw image strips comprise every other one of said respective image strips. Thus, the raw image is comprised of alternating left image strips and right image strips with each other one of the left and right source image strips being omitted.

30 In one embodiment of the invention, the masking means is disposed on the raw image. In another embodiment of the invention, the masking means is disposed on the lens strip of array. In a further embodiment of the invention, the masking means

comprises a separate mask member disposed between and spaced from the raw image and lens strip array.

In an embodiment of the invention, the vertical opaque strips forming the masking means are of substantially the same width as the said raw image strips and the vertical
5 opaque strips have their centre lines respectively in register with alternate lines of junction between raw image strips. In this embodiment, the vertical lens strips are also of substantially the same width as the raw image strips and have their centre lines respectively in register with other alternate lines of junction between raw image strips.

In another embodiment of the invention, the raw image strips each contain three
10 columns of pixels of different colours, for example Red, Green and Blue. In this embodiment, the opaque strips are of the same width as an individual pixel column while the lens strips are of a width equal to the width of the three columns. The opaque strips are spaced apart a distance equal to the width of the three columns.

The array of substantially vertical lens strips may be said to constitute a lenticular
15 lens. Each individual lens may have a cylindric shape or, more preferably, be in the form of tri-elliptical lens. Alternatively, the lens may be of prismatic or other form to provide the desired refraction of received light.

In another form of the invention, each lens of the lenticular lens structure has a circular cross-section and is separated from adjacent lens by an opaque strip.

In a further form of the invention, the masking means is combined with the array
20 of substantially vertical lens strips in such a way that the mask is formed as a base elongate portion of optical material into a first surface of which are formed spaced lens strips with the spaces between the strips being of the base optical material.

25 **BRIEF DESCRIPTION OF DRAWINGS**

Embodiments of the invention will now be described with reference to the accompanying drawings wherein:-

Figure 1 illustrates the general layout of a stereoscopic viewing system to which
embodiments of the present invention can be applied;

Figure 2 illustrates steps in the formation of raw stereoscopic image to which a
30 first embodiment of the invention can be applied;

Figure 3 illustrates a mask applicable to the raw image of Figure 2 according to the first embodiment of the invention;

Figure 4 illustrates a mask applicable to a flat panel or plasma display;

Figure 5 illustrates a specific driver circuit for the production of an active raw image;

Figure 6 illustrates an arrangement of raw image and mask according to a further embodiment of the invention;

Figure 7 illustrates a raw image and mask layout according to a further embodiment of the invention;

Figure 8 is a detailed view in cross section of the lenticular lens of Figure 7; and

Figure 9 is a detailed view in side section of a lenticular lens incorporating a mask according to a further embodiment of the invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

With reference to Figure 1, there is shown a stereoscopic viewing system 10 comprising a raw image 11 and a lenticular lens 12 spaced from the raw image 11 a distance D. The lens 12 includes an optical arrangement whereby light rays from the raw image 11 are directed to either the left eye 13 or right eye 14 of a viewer 15 so as to form a three-dimensional image to the viewer. As herein after describes, the eyes of the viewer 15 will be located on a focal plane 25 or adjacent that focal plane such as indicated by the focal plane Width.

With reference to Figure 2, the raw image 11 is formed as follows:-

A stereoscopic raw image 11 is generated initially as two separate images comprising a left eye view 3 and a right eye view 4. The left eye view 3 is labelled image A whilst the right eye view 4 is labelled image B. Each image is then divided up into vertical strips 1 to 9 of equal pitch P. Alternate strips are then taken from the two images 3 and 4 as indicated by the arrows, emitting each second strip from each image 3 and 4. Thus, the strips A1, A3, A5,... are interleaved with the strips B2, B4, B6, B8... to produce the composite raw image 11. It will therefore be understood that the raw image 11, in this embodiment of the invention, comprises alternate strips taken from the left eye view image 3 and the right eye view image 4, and while parts of the left eye and right eye images are omitted from the final raw image 11, the viewer is unable to discern missing parts of the image.

The raw image "may be in the form of a photograph or like 'passive'/reflective image source or it may be in the form of a video display or like 'active'/light emitting image source. In either case, light reflected from or light emanating from the raw image" needs to be optically processed through a lenticular lens 12 so as to redirect the light rays for reconstruction by eyes 13, 14.

With reference to Figure 3 an implementation of a mask 17 according to the first embodiment of the invention is illustrated. Specifically Figure 3A shows the raw image 11 produced as described above and to which the mask 17 of Figure 3B is applied or overlaid.

The mask 17 comprises a plurality of opaque strips which overlie the alternate lines of junction between the raw image strips 16. The mask may either be applied directly to the raw image 11, as illustrated in the embodiments shown in Figures 6 and 7, or may be applied to or form part of the lenticular lens 12, as illustrated in Figures 8 and 9. Alternatively, the mask 17 may be a separate mask member interposed either between the raw image 11 and the lenticular lens 12 or between the lenticular lens 12 and the focal plane 25. Irrespective of its physical location, the mask effectively blocks light from the raw image 11 thereby facilitating the separation of left hand and right hand images to the respective left and right eyes of an observer.

If the mask 17 is incorporated into the lenticular lens 12, or constitutes a separate mask member, the displacement or distance D between the raw image 11 and the mask 17 can vary between 0 and typically around 2-14cms depending on the nature of the light refracting element used to form the lenticular lens 12.

With reference to Figure 4, the manner of construction of a colour raw image 18 is illustrated in Figure 4A and comprises alternating left image colour strips 19 and right image colour strips 20. Each image strip is, itself, comprised of three primary colour strips labelled R (red) G (green) and B (blue). The corresponding colour mask 21 is illustrated in Figure 4B and comprises opaque strip 24 which is of a width corresponding to the width of one of the primary colour strips labelled R, G and B. The opaque strips 24 are spaced apart a distance equalled to the width of the colour strips 19 and 20 so that the opaque strips 24 mask a red primary coloured strip R of one colour image strip 19, the green primary coloured strip green of the next colour strip 20, the blue primary colour strip B of the next colour strip 19, etc. Thus, the masking masks

collective right image strips 114 to the right eye 116 of a viewer when located in a specified focal plane 119.

In this embodiment the lenses 118 are contiguously connected in a linear array as illustrated in Figure 6. The only masking of light information is performed by the
5 opaque strips 117 located, in this instance, directly on the raw image 111 as illustrated.

Figure 7 illustrates a further embodiment of the invention comprising a stereoscopic viewing system 210 having a raw image 211 and a lenticular lens 212 wherein all other components are numbered as for the embodiment of Figure 6 where like components are utilised.

In this embodiment, the mask comprises both the opaque mask strips 117 which are applied directly to the raw image 212 as shown in Figure 6 as well as separate opaque mask elements 213 which are placed on the lenticular lens 212 between each tri-elliptical lens 118. With this form of masking, a reduction in the refracted light passing through the lenticular lens 212 increases the separation effect between the left
10 hand raw image and the right hand raw image.

In this instance the width of the opaque mask elements 213 interconnecting the tri-elliptical lenses 118 is the dimension P.

With reference to Figure 8 a detailed cross section of the mask 212 of Figure 7 is illustrated showing the tri-elliptical lenses to be formed as part of an elongate strip of
20 optical material 214 made from optical material having a refractive index between 1 and 2.

Particular materials which are suitable include clear plastic; glass, thermoset plastic (CR39); plexiglass; and acrylic resin in the form of methyl methacrylate (which has a specific refractive index of 1.49).

The strip 214 comprises a base elongate portion 215 into which one face has formed the tri-elliptical lens structure 118 and between which planar portions 216 having an opaque strip 217 applied thereover as illustrated in Figure 8.

Figure 9 illustrates an alternative lens 312 suitable for use with any of the previously mentioned embodiments of stereoscopic viewing system. The lens 312
30 comprises a linear array of spherical cross-section lenses 313 in between which are located opaque joining portions 314 formed as a square cross-section block having a

triangular cross section opaque portion 315 located therein as generally illustrated in Figure 9.

The surface of the circular cross-section lenses 313 can be profiled as a set of planar portions forming a segmented planar approximation 316 to a cylindrical or
5 curved surface.

The above describes only some embodiments of the present invention and modifications, obvious to those skilled in the art, can be made thereto without departing from the scope and spirit of the present invention.

CLAIMS

1. A stereoscopic viewing system comprising a raw image of a subject, which raw image comprises an array of substantially vertical raw image strips wherein alternating strips are respectively strips taken from source images, being a right eye view image and a left eye view image of the subject, an array of substantially vertical lens strips interposed between the raw image and a focal plane spaced from the raw image, wherein the respective lens strips are positioned to receive light from the raw image strips and refract that received light to cause a stereoscopic image of the subject to be resolved on the focal plane, and masking means comprising a substantially planar array of vertical opaque strips interposed between the raw image and the said focal plane.
2. A stereoscopic viewing system according to claim 1 wherein, in forming the array of raw image strips, the right eye source image and the left eye source image are both divided into adjacent vertical strips, and those strips taken for the raw image strips comprise every alternate one of said respective source image strips so that every other one of the source image strips is omitted from the raw image.
3. A stereoscopic viewing system according to claim 1 or claim 2 wherein, for a monochrome image, the vertical opaque strips are of substantially the same width as that of said raw image strips and have their centre lines respectively in register with alternate lines of junction between raw image strips, and the vertical lens strips are also of substantially the same width and have their centre lines respectively in register with other alternate lines of junction between raw image strips.
4. A stereoscopic viewing system according to claim 1 or claim 2 wherein, for a colour image, the raw image strips each contain a trio of columns of respectively R G and B pixels, that the lens strips are as wide as the trio and the opaque strips are of the same width as the individual R G and B pixel columns and are disposed between the lens strips.
5. A stereoscopic viewing system according to any one of claims 1 to 3 wherein the masking means is in contact with the raw image.
6. A stereoscopic viewing system according to any one of claims 1 to 4 wherein the opaque strip array is substantially co-planar with the lens strip array.
7. A stereoscopic viewing system according to any one of claims 1 to 6 wherein the array of lens strips comprises a lenticular lens system in which each lens is of a tri-elliptical cross-section.

- 10 -

8. A stereoscopic viewing system according to any one of claims 1 to 6 wherein the array of lens strips comprises a lenticular lens system in which each lens is of a circular cross-section.
9. A stereoscopic viewing system according to any one of claims 1 to 8 wherein the mask means comprises a separate mask member between the raw image and the lens strips.
10. A stereoscopic viewing system substantially as hereinbefore described with reference to the accompanying drawings.

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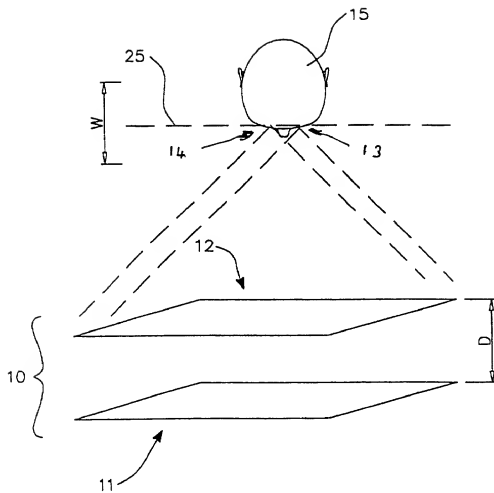


Fig. 1

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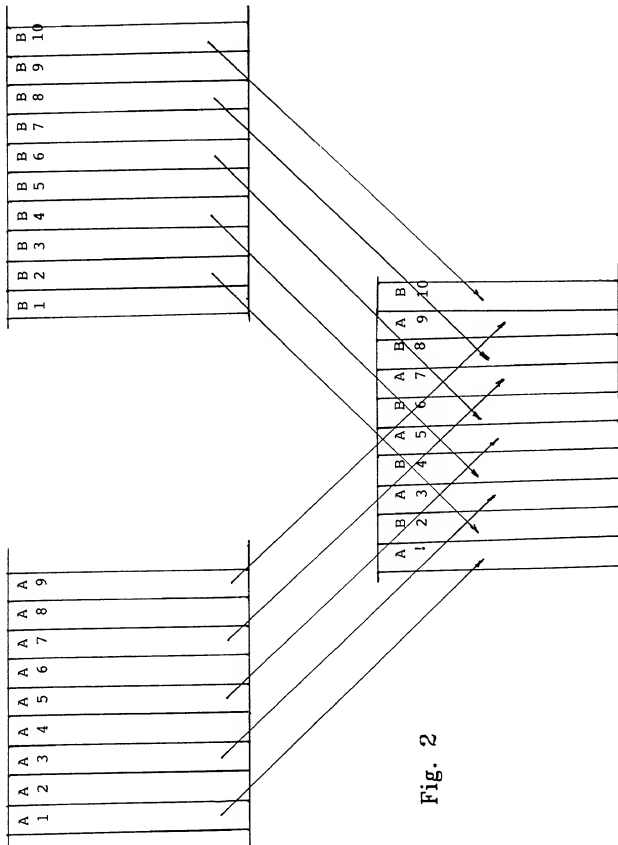


Fig. 2

AMENDED SHEET
IPEA/AU

ARTICLE 34

WO 99/09750

PCT/AU98/00635

3/9

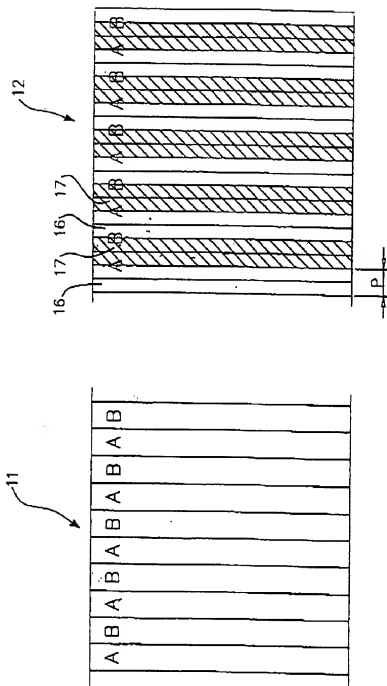


Fig. 3B

WO 99/09750

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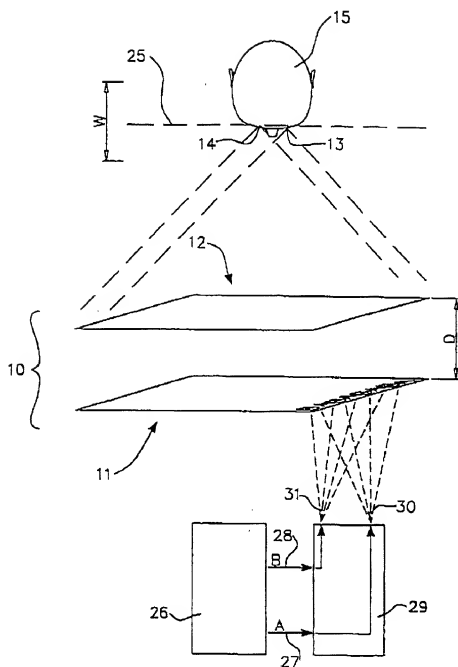


Fig. 5

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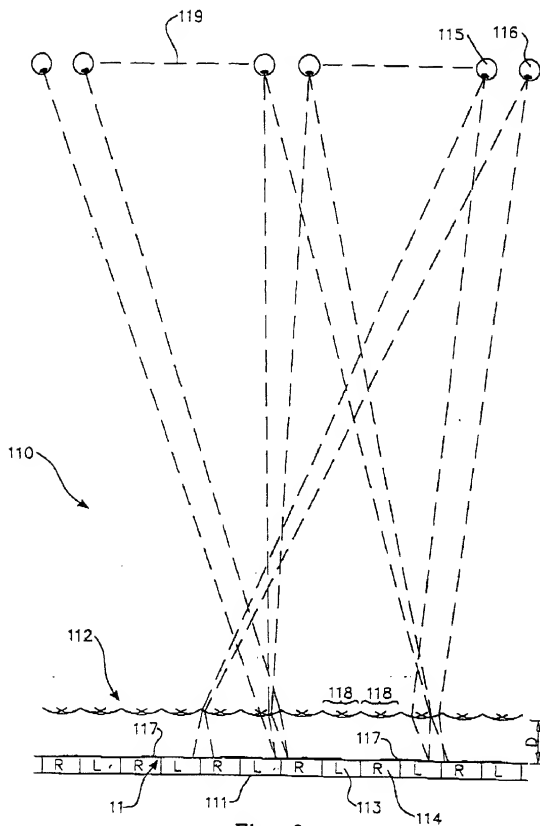


Fig. 6

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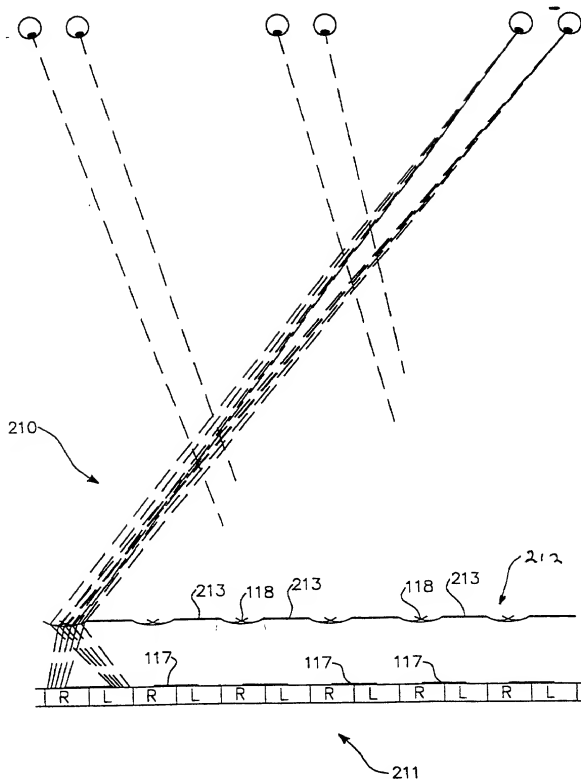


Fig. 7

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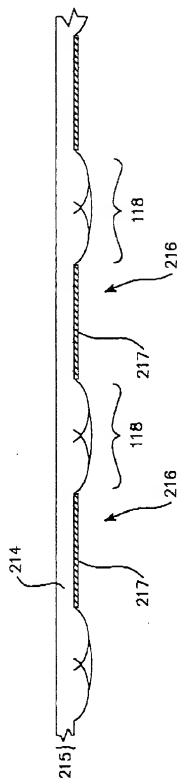


Fig. 8

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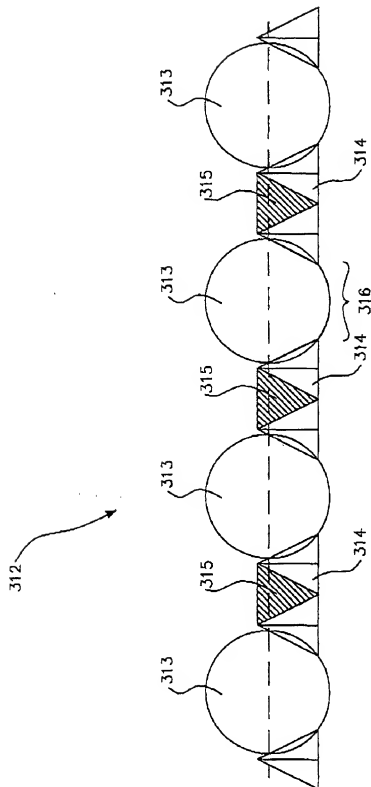


Fig. 9

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare:

That my residence, post office address and citizenship are as stated below next to my name:

That I verily believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

STEREOSCOPIC VIEWING SYSTEM

the specification of which
(check one)

☐ is attached hereto.

☒ was filed on 12 August 1998 as
Application Serial No. PCT/AU98/00635
and was amended on _____
(if applicable)

That I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

That I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

That I hereby claim foreign priority benefits under Title 35, United States Code, §119 and §172 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate on this invention having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

Priority Claimed

<u>PO 8523</u> (Number)	<u>Australia</u> (Country)	<u>12 August 1997</u> (Day/Month/Year)	<input checked="" type="checkbox"/> <input type="checkbox"/> Yes No
_____ (Number)	_____ (Country)	_____ (Day/Month/Year)	<input type="checkbox"/> <input type="checkbox"/> Yes No
_____ (Number)	_____ (Country)	_____ (Day/Month/Year)	<input type="checkbox"/> <input type="checkbox"/> Yes No

That I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

United States Application(s)

(Appl. Ser. No.)

(Filing Date)

(Status) (patented, pending, abandoned)

That all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

I hereby appoint the following attorneys, with full power of substitution and revocation, to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith, and request that all correspondence and telephone calls in respect to this application be directed to GREER, BURNS & CRAIN, LTD., Suite 8660 - Sears Tower, 233 South Wacker Drive, Chicago, Illinois 60606, Telephone No. (312) 993-0080:

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(9)

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Anthony John GARDNER

Inventor's signature:

[Signature]

Date:

15th April 2000

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